



Temporal, seasonal and weather effects on cycle volume: An ecological study

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Abstract:

Background: Cycling has the potential to provide health, environmental and economic benefits but the level of cycling is very low in New Zealand and many other countries. Adverse weather is often cited as a reason why people do not cycle. This study investigated temporal and seasonal variability in cycle volume and its association with weather in Auckland, New Zealand's largest city. **Methods.** Two datasets were used: automated cycle count data collected on Tamaki Drive in Auckland by using ZELT Inductive Loop Eco-counters and weather data (gust speed, rain, temperature, sunshine duration) available online from the National Climate Database. Analyses were undertaken using data collected over one year (1 January to 31 December 2009). Normalised cycle volumes were used in correlation and regression analyses to accommodate differences by hour of the day and day of the week and holiday. **Results:** In 2009, 220,043 bicycles were recorded at the site. There were significant differences in mean hourly cycle volumes by hour of the day, day type and month of the year ($p < 0.0001$). All weather variables significantly influenced hourly and daily cycle volumes ($p < 0.0001$). The cycle volume increased by 3.2% (hourly) and 2.6% (daily) for 1°C increase in temperature but decreased by 10.6% (hourly) and 1.5% (daily) for 1 mm increase in rainfall and by 1.4% (hourly) and 0.9% (daily) for 1 km/h increase in gust speed. The volume was 26.2% higher in an hour with sunshine compared with no sunshine, and increased by 2.5% for one hour increase in sunshine each day. **Conclusions:** There are temporal and seasonal variations in cycle volume in Auckland and weather significantly influences hour-to-hour and day-to-day variations in cycle volume. Our findings will help inform future cycling promotion activities in Auckland.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3368741>

Resource Description

Exposure : ☒

weather or climate related pathway by which climate change affects health

Meteorological Factors, Precipitation, Solar Radiation, Temperature

Temperature: Fluctuations

Geographic Feature: ☒

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : subtropical

Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact:

specification of health effect or disease related to climate change exposure

General Health Impact

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified